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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,245	01/05/2001	Christopher E. Ruckman	V1000.0003/P003	3645

7590 12/28/2001

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EXAMINER

TORRES, MELANIE

ART UNIT

PAPER NUMBER

3613

DATE MAILED: 12/28/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

SK

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/754,245	RUCKMAN ET AL.
	Examiner Melanie Torres	Art Unit 3613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 05 January 2001.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-22 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - a)  The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

- 4) Interview Summary (PTO-143) Paper No(s) \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 4, 5, 13 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper '326 in view of Zimmermann.

Re claims 1, 4 and 5, 13 and 19, Harper teaches a vibration control system comprising an actuator (14, 15), a sensor (27, 28), and a digital control system (35). However, Harper does not teach wherein the electromagnetic actuator comprises a flux sensor. Zimmermann teaches an actuator (100) comprising a flux sensor (150), which sends signals representative of the flux generated in the gap between the armature and the magnetic coil (113). It would have been obvious to have used the integrated actuator of Zimmermann in the system of Harper so as to achieve greater control of the actuator.

Re claim 2, Harper as modified teaches wherein the magnet coil (113) is integrally fixed to the controlled structure.

Re claim 3, Harper as modified teaches wherein the flux sensor (150) is connected to the magnet coil (113).

Re claim 20, Harper as modified teaches wherein the processor is arranged to calculate the difference between the flux density sensed by the magnetic flux density sensor and the flux density required in the actuator.

Re claim 21, Harper as modified teaches wherein the electromagnet is integrally connected to the variable-state structure, and the armature is integrally connected to an external structure. (Fig. 1, Zimmermann)

Re claim 22, Harper as modified teaches wherein the electromagnet is sealed to prevent degradation by fluids and dust.

3. Claims 5-12 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper in view of Zimmerman as applied to claim 1 above, and further in view of Sandercock.

Re claims 5-7 and 14-18, Sandercock teaches a digital control system for operating actuators as a function of sensed vibration of a variable-state structure, sensed vibration of a feedforward reference and the variable state of the variable state structure. (Column 2, line 64 – Column 3, line 25) It would have been obvious to have

applied the teachings of Sandercock to the system of Harper as modified so as to provide vibration isolation over a variety of frequencies.

Re claim 6, Harper as modified teaches wherein the digital control system includes modal feedback loops for controlling the actuators in response to signals from the vibration sensors (27, 28).

Re claim 7, Harper as modified teaches wherein the gains of the modal feedback loops are controlled as a function of the variable state of the variable-state structure.

Re claim 8, Harper teaches one or more feedforward sensors for sensing vibration of feedforward references.

Re claim 9, Harper teaches wherein the digital control system includes one or more feedforward loops for controlling the actuators in response to signals from the feedforward sensors.

Re claims 10-12, Harper teaches wherein the plant transfer functions of the feedforward loops are controlled as a function of the variable state of the variable-state structure.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mayama et al., Rossetti et al., Harper, '124, Alexander, and Su, teach vibration control systems comprising an electromagnetic actuator consisting of an armature, a magnet coil and a sensor, and a digital control system. Holacher et al., Kurth and Banick et al. teach electromagnetic actuators comprising an armature, a coil, and a flux sensor.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Torres whose telephone number is (703)305-0293. The examiner can normally be reached on 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Schwartz can be reached on (703)308-0576. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-2571 for regular communications and (703)308-2571 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1113.

MT  
December 20, 2001

CHRISTOPHER P. SCHWARTZ  
PRIMARY EXAMINER  
